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The time period for reply, if any, is set in the attached communication.

RECORD OF ORAL HEARING  
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex Parte* PAUL ANTHONY GILKERSON

Appeal 2009-013779  
Application 10/779,808  
Technology Center 2100

Oral Hearing Held: May 6, 2010

Before LANCE LEONARD BARRY, ST. JOHN COURTENAY, III, and  
JAMES R. HUGHES, *Administrative Patent Judges*.

APPEARANCES:

ON BEHALF OF THE APPELLANT:

STANLEY SPOONER, ESQUIRE  
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Arlington, Virginia 22203

1           The above-entitled matter came on for hearing Thursday, May 6,  
2   2010, commencing at 1:16 p.m., at the U.S. Patent and Trademark Office,  
3   600 Dulany Street, Alexandria, Virginia, before Deborah Courville, a Notary  
4   Public.

5           JUDGE BARRY: We use the timer. It gives you 18 minutes of  
6   green, I think amber at 19 -- or 18, and then it starts blinking at 19, and then  
7   we'll be done.

8           MR. SPOONER: Okay. I'm sorry. I forgot.

9           JUDGE COURTENAY: Right.

10          MR. SPOONER: Well, let me make it somewhat easier. I put  
11   together a summary of the arguments --

12          JUDGE COURTENAY: Is this of record in the file, this --

13          MR. SPOONER: Those are the arguments made in Brief A.

14          JUDGE COURTENAY: Okay. So this is not new evidence?

15          MR. SPOONER: Argument A. It's not in that format.

16          JUDGE COURTENAY: Okay, but it's --

17          MR. SPOONER: But this is a summary of those arguments, so that  
18   you can compare one to the other.

19          JUDGE COURTENAY: Okay.

20          MR. SPOONER: All right. Turning to your question, we're really  
21   talking about two portions of the claim, the address generation logic and this  
22   pipeline stage, and the Examiner is basically saying that -- well, our claim,  
23   the claim terminology on the left there, is the claim has to be responsive to a  
24   selected prefetched instruction that is detected to be an instruction flow  
25   changing instruction, the IFCI. So those are the ones that we're on the  
26

1 lookout for. Our claim has a prefetch unit that detects those. It says so  
2 about halfway down in the prefetch unit paragraph. And then, the address  
3 generation logic, over in the next paragraph, is responsive.

4 JUDGE BARRY: We're looking at Claim 1? For the record, we're  
5 looking at Claim 1?

6 MR. SPOONER: Yes, sir. Is "responsive to a selected prefetched  
7 instruction that is detected to be [an] instruction flow changing instruction."  
8 All right. So that's one first thing.

9 The Examiner hasn't pointed out anywhere in the prior art, either one,  
10 where there is any detection of whether it's an instruction flow changing  
11 instruction or not. He just says, he looks at Furman [sic] and says, ah hah, a  
12 branch instruction. Everyone knows that's an instruction flow changing  
13 instruction, IFCI, therefore, he's got to disclose it. And he's correct. It is.

14 But it says there, and the Inventors tell me that this is true, it doesn't  
15 differentiate as to how it handles those instructions, whether it's an IFCI or  
16 not an IFCI. And that paragraph there, if you read it carefully, it says that  
17 the thumb packet may contain zero, one or two branch instructions, but it  
18 handles it the same. It doesn't say if it has a branch instruction -- if it's the  
19 first branch instruction, it handles it one way, and if it's the second or  
20 subsequent IFCI, it handles it differently.

21 So that's the first bit. It's the responsive to this detection that takes  
22 place in the previous paragraph. Merely saying that the packet contains  
23 zero, one or two branch instructions doesn't say anything about whether it  
24 detects that it's an IFCI or not, or that it takes some action based on that  
25 detection.

26

1 JUDGE COURTENAY: And where in your Claim 1 is it positively  
2 recited that the address generation logic does this detection?

3 MR. SPOONER: It's the prefetch unit, operable, and then go about  
4 halfway down that paragraph, and it says "Being operable to detect whether  
5 any of those prefetched instructions are an instruction flow changing  
6 instruction."

7 JUDGE COURTENAY: Okay.

8 MR. SPOONER: That's the bit. And then it's the next paragraph. It  
9 says the address generation logic is responsive to that detection. So that's  
10 the sort of interrelationship between those two paragraphs. The second  
11 point --

12 JUDGE BARRY: Well, that's another thing I'm not clear about,  
13 because if a packet contains zero branch instructions, then there is no need  
14 for the branch prediction unit to go to work at all. So I would tend to agree  
15 with the Examiner, that is inherent.

16 MR. SPOONER: No, what it says -- what that says is that it gives no  
17 distinction to whether or not it's an IFCI, because it handles zero branches  
18 exactly the same as it handles one or two branches. In other words, if the  
19 branch is the IFCI, and it has zero branches --

20 JUDGE BARRY: Right, there's no need --

21 MR. SPOONER: -- then there's no branch.

22 JUDGE BARRY: Then there's no need to determine a target address  
23 for the branch.

24 MR. SPOONER: Exactly.

25 JUDGE BARRY: So that is handling it differently.

26

1 MR. SPOONER: No, it's handling it all the same. If it's A, B or C, it  
2 handles all of them the same. Our invention says that if it's the first IFCI to  
3 occur, we handle it one way; if it's the second IFCI, we handle it another  
4 way. But first, you have to detect whether it's an IFCI. He doesn't care.  
5 He's going to handle a zero branch instruction just the same as he handles a  
6 one branch instruction, just the same as he handles a two branch instruction.  
7 I mean that's the way I read the paragraph and what the Inventor tells me it  
8 says.

9 JUDGE BARRY: And this -- just so we can flesh this out, where is  
10 this? What page of your Appeal Brief is this argument made?

11 MR. SPOONER: Page 13, the second paragraph on page 13.  
12 Moreover, there's simply no identification of the IFCI.

13 JUDGE BARRY: I see.

14 MR. SPOONER: Now, that's going to the first or second. We haven't  
15 even gotten to that yet, because we do one thing for the first -- the detection  
16 of the first IFCI.

17 JUDGE BARRY: Well, see, that's --

18 JUDGE COURTENAY: And then all of the subsequent branch  
19 instructions are treated a different way?

20 MR. SPOONER: Yes, yes.

21 JUDGE BARRY: Okay.

22 MR. SPOONER: Okay?

23 JUDGE BARRY: That argument on page 13 is whether the IFCI is  
24 first or second, not whether it's an IFCI at all.

25 MR. SPOONER: Exactly. But how do you know if it's an IFCI?

26

1 JUDGE BARRY: Well, where did you make that argument in the  
2 Brief is my question.

3 MR. SPOONER: You have to -- I think that's also on -- I was going  
4 to say page 13, but I don't think it is. Well, I know it's made in the summary.  
5 I can't put my finger on it at page 13 or 14, but it's certainly --

6 JUDGE BARRY: Well, why don't you point to it in the summary?

7 MR. SPOONER: In the Reply Brief, it's on page 13, the first full  
8 paragraph. That summarizes the two features that we believe are missing  
9 from the combination. The address generation logic, which has a first  
10 address path for --

11 JUDGE BARRY: Wait a minute. Where -- this is the first full  
12 paragraph?

13 MR. SPOONER: Yes, sir.

14 JUDGE BARRY: Okay.

15 MR. SPOONER: "It is respectfully requested that the Board carefully  
16 consider" --

17 JUDGE BARRY: -- "the address generation logic, which has a first  
18 address path for first instruction and at least one further path for other  
19 instructions." Once again, I don't see this argument being made in the Reply  
20 Brief. I don't think we can consider it here at the Oral Hearing, so if you  
21 could please move on to an argument that's been made prior.

22 MR. SPOONER: Right. Well, that argument is of record. The claim  
23 requires certain things. We've asked the Examiner repeatedly to identify  
24 where those things are, and he hasn't done so. So, you know, I mean I can't  
25 put my finger on it right now, and I'd be happy to file a paper after the  
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1 hearing if you want that identified. The third point is in that same  
2 paragraph with respect to the address generation logic.

3 JUDGE BARRY: See, counsel, right here on page 4 of his Answer,  
4 the Examiner lays out where -- is this a he -- Robert -- yeah, I think we can  
5 safely say it's a he. He lays out -- on page 4 of his Answer, Robert lays out  
6 where he believes this is taught, and I don't see an argument in your Brief, so  
7 I don't think, at the risk of being redundant, I don't think we can consider  
8 that argument here at Oral Hearing.

9 MR. SPOONER: All right. Where is this you're referencing, sir?

10 JUDGE BARRY: Page 4 of the Examiner's Answer.

11 MR. SPOONER: I've got it. I mean is that -- is it the bottom  
12 paragraph, the paragraph --

13 JUDGE BARRY: The middle paragraph. I mean he's just reciting  
14 your claim.

15 MR. SPOONER: Right.

16 JUDGE BARRY: He believes it's taught at page 382.

17 MR. SPOONER: That's the prefetch unit.

18 JUDGE BARRY: Right, and that's what we're talking about, the  
19 prefetch unit's construction.

20 MR. SPOONER: All right. And where does he say the prefetch unit  
21 does this determination?

22 JUDGE BARRY: Well, why don't you read the fifth line, starting  
23 with "And for the record"?

24 MR. SPOONER: "And being operable to detect," and he says that --

25 JUDGE BARRY: Rather -- please read, please continue.

26



1 MR. SPOONER: No, I understand the logic there.

2 JUDGE BARRY: "Where any of those prefetched instructions are  
3 instruction flow change instructions." And then he gives you his cites, 382,  
4 an explanation, 387. So, as far as I can see, the Examiner has made a  
5 finding about that, and I don't see that that's contested in either Brief. I think  
6 you might want to proceed with another argument.

7 MR. SPOONER: Well, I mean the whole purpose of an Oral Hearing  
8 is to respond to arguments. I would point out that number -- that page 382 is  
9 just a generic reference, and that's a known prior art device.

10 JUDGE BARRY: But your --

11 MR. SPOONER: It doesn't say anything about detecting.

12 JUDGE BARRY: Where have you made that argument in your  
13 Briefs? I'll ask again.

14 MR. SPOONER: Well, I can't put my finger on it at this point.

15 JUDGE BARRY: Okay. Then we can't consider it at this point.

16 MR. SPOONER: Okay. The second point, we clearly say in the Brief  
17 that it's -- that this address generation logic is responsive to that detection,  
18 and that's in there. In other words, page --

19 JUDGE COURTENAY: Again, I have a point of confusion. Is it  
20 address generation logic that does the actual detection?

21 MR. SPOONER: No, sir.

22 JUDGE COURTENAY: In the first paragraph of your claim, you  
23 have the prefetch unit that does the detection.

24 MR. SPOONER: Yes.

25

26

1 JUDGE COURTENAY: And then you say the address generation  
2 logic is within the prefetch unit.

3 MR. SPOONER: It doesn't have to be; it can be, and in our claim we  
4 require it to be.

5 JUDGE COURTENAY: In the claim it says address generation  
6 logic --

7 MR. SPOONER: Within the prefetch unit and responsive --

8 JUDGE COURTENAY: -- within the prefetch unit and responsive  
9 to a prefetch instruction --

10 MR. SPOONER: -- to that detection.

11 JUDGE COURTENAY: -- that is detected.

12 MR. SPOONER: Right.

13 JUDGE COURTENAY: So the claim doesn't actually require the  
14 address generation logic to do the actual detection. It's the prefetch unit that  
15 does the detection.

16 MR. SPOONER: Yes, sir, the prefetch unit does the detection. It's  
17 the address generation logic which is within that unit that acts upon that  
18 detection and --

19 JUDGE COURTENAY: So it's responsive to the detection.

20 MR. SPOONER: Yes.

21 JUDGE COURTENAY: But in your paper here that you've  
22 introduced into the record you say that the IFCI are detected by the claimed  
23 address generation logic. That's my point of confusion. It seems to be  
24 different than what the claim recites.

25

26

1 MR. SPOONER: Well, you're correct. That -- I shouldn't have said  
2 that because what I was talking about is the responsive-to aspect, because we  
3 didn't even want to get into the address generation logic -- excuse me, we  
4 didn't want to get into the prefetch unit. We --

5 JUDGE COURTENAY: Okay. We've clarified the claim, so --

6 MR. SPOONER: Right, right. The -- firstly, the third point that  
7 might be of interest is that there's no disclosure in Furber of making any  
8 detection as to whether an instruction is an IFCI. Now we have made that  
9 argument. That's the third paragraph on Page 13 of the Appeal Brief.

10 JUDGE COURTENAY: Now, any processor instruction to code or  
11 decodes the binary equivalent of the mnemonic representing the  
12 instruction --

13 MR. SPOONER: Right.

14 JUDGE COURTENAY: -- it's going to detect whether it's a branch  
15 instruction as opposed to another type of instruction. But your claim  
16 requires this prefetch unit to do a second detection.

17 MR. SPOONER: Well, I don't know whether that's a second  
18 detection. We're detecting whether the instruction is an IFCI instruction in  
19 there, and then we act in response to that.

20 JUDGE COURTENAY: Well, your prefetch unit --

21 MR. SPOONER: Right.

22 JUDGE COURTENAY: So it hasn't actually gotten to the instruction  
23 decoder at that point?

24 MR. SPOONER: Right.

25 JUDGE COURTENAY: It's being prefetched from memory?

26

1 MR. SPOONER: Right. Yeah.

2 JUDGE COURTENAY: Do you understand my point? The  
3 processor does the fetch and execute cycle, the program counter is loaded  
4 with the address of the next instruction --

5 MR. SPOONER: Right, but that's not --

6 JUDGE COURTENAY: -- but that instruction is loaded from  
7 memory into an instruction register --

8 MR. SPOONER: But is that a prefetch system?

9 JUDGE COURTENAY: No, no.

10 MR. SPOONER: Yeah.

11 JUDGE COURTENAY: I'm just talking about a conventional  
12 microprocessor.

13 MR. SPOONER: Okay.

14 JUDGE COURTENAY: So any conventional microprocessor, when  
15 the instruction decoder decodes the fetched instruction, it will discern  
16 whether it's a branch instruction or any other instruction as part of the  
17 instructions out of the microprocessor.

18 MR. SPOONER: Sure.

19 JUDGE BARRY: Yeah, and I don't believe this rises to a level of  
20 addressing the Examiner's finding. "The Appellant believes the Examiner  
21 will be unable to make any identification." That doesn't even address the  
22 page the Examiner identified, so I also don't consider that a responsive  
23 argument.

24

25

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1 JUDGE COURTENAY: But do you -- we have -- you have an  
2 apparatus claim here in Claim 1. Do we have the corresponding structure in  
3 the combination of references?

4 MR. SPOONER: No. I mean that's my point.

5 JUDGE COURTENAY: Can you expand on that again, a little bit  
6 further, to make it clear?

7 MR. SPOONER: All right. Well, first, let's go to the last structure  
8 that's recited in the claim, the pipeline stage. This is -- the last part of the  
9 address generation logic says that the first address generation path, that's the  
10 one where the first detected IFCI goes down, it does down that path more  
11 quickly than the subsequent ones, the path that the subsequent ones go  
12 down. All right. That's not disclosed anywhere in Furber.

13 And then, the way in which we do that, this claim is limited to the  
14 way in which we actually make that go quicker. We have the pipeline stage  
15 there at the end of the claim, which is provided, and said at least one further  
16 address generation path. So that's a delay that is stuck into the further and  
17 subsequent paths, not the first one. So that ensures that the first one acts  
18 quickly. What the Examiner has done --

19 JUDGE BARRY: And where does the Examiner propose adding  
20 Patterson and Hensley's pipeline, to which path?

21 MR. SPOONER: He does. He says --

22 JUDGE BARRY: No, which one does he propose adding it to?

23 MR. SPOONER: Patterson. Adding the pipeline of Patterson to  
24 Furber.

25

26

1 JUDGE BARRY: Yeah. Does he propose adding it to the first path  
2 or the further path?

3 MR. SPOONER: He doesn't say, I don't believe. But he doesn't  
4 indicate that pipeline stage is going to provide a delay or not. He doesn't  
5 talk about delays. And, in fact, the only thing he talks about there is he  
6 provides a mechanism for when the hits are synchronous when he gets a hit  
7 at the same time, that he then goes to the first -- the priority goes to -- what  
8 is it, the even, the even word -- the even address, the first instruction,  
9 whether or not that instruction is an IFCI instruction. In other words, if that  
10 first instruction is a zero branch instruction, it's not an IFCI instruction, and  
11 yet he's going to give priority to that one. So he could give priority to that  
12 instruction, which is not an IFCI instruction, and then the next one that's an  
13 IFCI instruction, he's going to send down the other path.

14 I mean the Examiner has pulled bits and pieces out of this reference,  
15 out of Furber, and the pipeline out of Patterson, and said somehow that it  
16 would be magically obvious to combine these in the matter of the claim.

17 JUDGE BARRY: Let's look at the Examiner's Answer on page 5, at  
18 the bottom. All right. The Examiner makes the finding that Patterson  
19 teaches pipelining a processor, which is true, that will reduce clock time,  
20 increasing the rate at which the clock runs, that's true, which would speed up  
21 execution of the first path, due to increased clock rate, so --

22 MR. SPOONER: All right. Which first path?

23 JUDGE BARRY: So the Examiner is basically proposing adding the  
24 pipeline to the first path, is the way I read that.

25 MR. SPOONER: All right.

26

1 JUDGE BARRY: And your claim adds the pipeline to which path,  
2 the first path or the further path?

3 MR. SPOONER: We add the pipeline to the further path.

4 JUDGE BARRY: Okay. So the Examiner is --

5 MR. SPOONER: We slow down the further path to make sure --

6 JUDGE BARRY: So the Examiner is adding it to the wrong path  
7 then?

8 MR. SPOONER: Well, I mean you could argue that. But he  
9 doesn't -- there would be no need to put a pipeline in Furber because Furber  
10 already has his own mechanism for deciding priority. If two instructions hit  
11 at the same time, he just goes with the one that's in the even side. He doesn't  
12 care whether it's an IFC instruction or a non-IFC instruction. He doesn't  
13 provide a path -- I mean I'm assuming, and I guess you are as well, that he's  
14 just taking the pipeline from this one, from Patterson, and sticking it on one  
15 of those paths. But there's no disclosure of there being any need for a path  
16 or a way to decide it because Furber solves the problem of simultaneous hits  
17 by just saying we're going with the even one.

18 JUDGE COURTENAY: So are you making a hindsight argument?

19 MR. SPOONER: Well, I mean I think it's a hindsight. I don't think  
20 the structural interrelationship is there. So the first thing is he's got to show  
21 all features for a 102.

22 JUDGE COURTENAY: So even if the references are arguably  
23 properly combined, we don't have the structure, in your view?

24 MR. SPOONER: Even if they were combined, yes, sir. I don't think  
25 the structures that are physically recited in our claims are present, even in  
26

1 the combination of references, the structures and the interrelationships,  
2 because that's important, and a lot of times we focus on just the structure.  
3 And the bits might be there, but the interrelationships certainly aren't there,  
4 and certainly, you don't have this pipeline that does what we say ours does.

5 I see some doubt on some faces. Any other questions?

6 JUDGE BARRY: I think our time's up. Thank you.

7 MR. SPOONER: Okay.

8 JUDGE BARRY: We will take it under advisement.

9 MR. SPOONER: All right. Thank you very much.

10 JUDGE COURTENAY: Thank you.

11 Whereupon, the proceedings, at 1:37 p.m., were concluded.

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